

IN THE DRAWINGS:

Submitted herewith is a replacement sheet for Fig. 2 incorporating a revision to show the one-way clutch 63, as recited in the claims and described in the specification, in order to comply with 37 C.F.R. §1.83(a).

REMARKS

In the last Office Action, the drawings were objected to under 37 C.F.R. §1.83(a) as failing to show the one-way clutch. Claim 1 was rejected under 35 U.S.C. §103(a) as being unpatentable over applicants' prior art disclosure in Fig. 14 ("APD") in view of U.S. Patent Publication No. 2004/0017454 to Yoshizawa et al. ("Yoshizawa"). Claims 2-7 were rejected under 35 U.S.C. §103(a) as being unpatentable over APD in view of Yoshizawa and further in view of U.S. Patent No. 5,210,547 to Watanabe et al. ("Watanabe"). Additional art was cited of interest.

In accordance with this response, the specification has been suitably revised to correct informalities, provide antecedent basis for the claim language, and bring it into better conformance with U.S. practice. Original independent claim 1 has been amended to further patentably distinguish from the prior art of record. Original claims 1-7 have also been amended in formal respects to improve the wording and to bring them into better conformance with U.S. practice. New claims 8-20 have been added to provide a fuller scope of coverage. A new abstract which more clearly reflects the invention to which the amended and new claims are directed has been substituted for the original abstract.

Submitted herewith is a replacement sheet for Fig. 2 incorporating a revision to show the one-way clutch 63

described in the specification and recited in the claims. The replacement sheet overcomes the objection under 37 C.F.R §1.83(a).

Applicants requests reconsideration of their application in light of the following discussion.

Brief Summary of the Invention

The present invention is directed to a printer for a thermally sensitive adhesive sheet.

Fig. 14 shows a conventional printer incorporating a printing unit 30 for printing on a printable surface of a thermally sensitive adhesive sheet 21, and a thermally activating unit 50 for heating a thermally sensitive adhesive layer of the adhesive sheet 21. As described in the specification (pgs. 1-4), the conventional printer has a complicated transporting mechanism for transporting the adhesive sheet 21 from the printing unit 30 to the thermally activating unit 50. For example, the conventional transporting mechanism has been unable to prevent unwanted slack in the adhesive sheet 21 between the printing unit 30 and the thermal activating unit 50.

The present invention overcomes the drawbacks of the conventional art. Figs. 1-3 show a printer P1 according to the present invention embodied in the claims. The printer P1 has a printing unit 30 for printing on a printable surface of

a thermally sensitive adhesive sheet 21 having a thermally sensitive adhesive layer formed on a surface opposite to the printable surface, and first transporting means (e.g., roller 33, stepping motor 110, and drive mechanism shown in Fig. 2) for transporting the thermally sensitive adhesive sheet 21 in a predetermined direction (e.g., in a direction forwardly of the printing unit 30). A cutter apparatus 40 cuts the thermally sensitive adhesive sheet 21 by a predetermined length after a printing operation by the printing unit 30. A thermally activating unit 50 is disposed at a preselected distance from the cutter apparatus 40 for heating the thermally sensitive adhesive layer of the thermally sensitive adhesive sheet 21. The thermally activating unit 50 has second transporting means (e.g., roller 53 and stepping motor 111) for transporting the thermally sensitive adhesive sheet 21 in the predetermined direction.

According to the present invention, the printer further comprises third transporting means (e.g., rollers 61, 62) for transporting the thermally sensitive adhesive sheet 21 in the predetermined direction between the cutter apparatus 40 and the thermally activating unit 50, and control means (e.g., CPU 100 via stepping motors 110, 111) for independently controlling the first and second transporting means to thereby independently control a transporting speed of the thermally sensitive adhesive sheet 21 during transportation thereof by the first and second transporting means.

By the foregoing construction of the printer according to the present invention, the third transporting means effectively transports the thermally sensitive adhesive sheet between the printing unit and the thermally activating unit without causing unwanted slack of the thermally sensitive adhesive sheet therebetween. Furthermore, the control means is able to provide for independent control of the first and second transporting means so that the transporting speed of the thermally sensitive adhesive sheet at the printing unit and the thermally activating unit, respectively, in the predetermined direction can be independently controlled, thereby insuring a reliable transfer of the thermally sensitive adhesive sheet from the printing unit to the thermally activating unit.

Traversal of Prior Art Rejections

Claim 1 was rejected under 35 U.S.C. §103(a) as being unpatentable over APD in view of Yoshizawa. Applicants respectfully traverse this rejection and submit that the combined teachings of APD and Yoshizawa do not disclose or suggest the subject matter recited in amended independent claim 1.

Amended independent claim 1 is directed to a printer for a thermally sensitive adhesive sheet and requires a printing apparatus comprising printing means for printing

during a printing operation on a printable surface of a thermally sensitive adhesive sheet having a thermally sensitive adhesive layer formed on a surface opposite to the printable surface, and first transporting means for transporting the thermally sensitive adhesive sheet in a predetermined direction. Amended claim 1 further requires a cutter apparatus for cutting the thermally sensitive adhesive sheet by a predetermined length after a printing operation by the printing means, and a thermally activating apparatus comprising heating means disposed at a preselected distance from the cutter apparatus for heating the thermally sensitive adhesive layer of the thermally sensitive adhesive sheet, and second transporting means for transporting the thermally sensitive adhesive sheet in the predetermined direction. Amended claim 1 further requires third transporting means for transporting the thermally sensitive adhesive sheet in the predetermined direction between the cutter apparatus and the thermally activating apparatus, and control means for independently controlling the first and second transporting means to thereby independently control a transporting speed of the thermally sensitive adhesive sheet during transportation thereof by the first and second transporting means. No corresponding structural and functional combination is disclosed or suggested by the prior art of record.

The primary reference to APD discloses a printer as described in the specification (pgs. 2-4) and shown in Fig. 14. As acknowledged by the Examiner, APD does not disclose or suggest third transporting means for transporting the thermally sensitive adhesive sheet in the predetermined direction between the cutter apparatus and the thermally activating apparatus, as recited in independent claim 1.

Moreover, amended independent claim 1 requires control means for independently controlling the first and second transporting means to thereby independently control a transporting speed of the thermally sensitive adhesive sheet during transportation thereof by the first and second transporting means, as recited in amended independent claim 1. APD clearly does not disclose or suggest the control means and corresponding function recited in amended independent claim 1.

The Examiner cited the secondary reference to Yoshizawa for its disclosure of first transporting means 21 for transporting an image receiving medium 1 through a printing unit (recording head 3), second transporting means 42 for transporting the image receiving medium 1 through a heat activating unit 41-43, and rollers 71, 72 as third transporting means for transporting the image receiving medium 1 from the printing unit to the heat activating unit 41-43. However, Yoshizawa does not disclose or suggest control means for independently controlling the first and second

transporting means to thereby independently control a transporting speed of a thermally sensitive adhesive sheet during transportation thereof by the first and second transporting means, as recited in amended independent claim 1. Yoshizawa does not disclose or suggest the type of driving mechanism for driving the transporting means, and much less that the first and second transporting means are independently controlled (e.g., the rotational speed of roller 21 and roller 42 are independently controlled).

Since Yoshizawa does not disclose or suggest the control means and corresponding function recited in amended independent claim 1, it does not cure the deficiencies of APD. Accordingly, one of ordinary skill in the art would not have been led to modify the references to attain the claimed subject matter.

In view of the foregoing, applicants respectfully request that the rejection of claim 1 under 35 U.S.C. §103(a) as being unpatentable over APD in view of Yoshizawa be withdrawn.

Claims 2-7 were rejected under 35 U.S.C. §103(a) as being unpatentable over APD in view of Yoshizawa and further in view of Watanabe. Applicants respectfully traverse this rejection and submit that the combined teachings of APD, Yoshizawa and Watanabe do not disclose or suggest the subject matter recited in amended dependent claims 2-7.

APD in view of Yoshizawa does not disclose or suggest the subject matter recited in amended independent claim 1 as set forth above for the rejection of independent claim 1 under 35 U.S.C. §103(a). Claims 2-7 depend on and contain all of the limitations of amended independent claim 1 and, therefore, distinguish from the references at least in the same manner as claim 1.

The Examiner cited the reference to Watanabe for its disclosure of third transporting means including at least one roller connected to a drive mechanism via a one-way clutch. However, Watanabe clearly does not disclose or suggest the structural combination of the printer recited in amended independent claim 1, from which claims 2-7 depend, including the first transporting means, the second transporting means, the control means and corresponding functions. Since Watanabe does not disclose or suggest these structural and functional features, it does not cure the deficiencies of APD as modified by Yoshizawa. Accordingly, one of ordinary skill in the art would not have been led to modify the references to attain the claimed subject matter.

In view of the foregoing, applicants respectfully request that the rejection of claims 2-7 under 35 U.S.C. §103(a) as being unpatentable over APD in view of Yoshizawa and further in view of Watanabe be withdrawn.

Applicants respectfully submit that newly added claims 8-20 also patentably distinguish from the prior art of record.

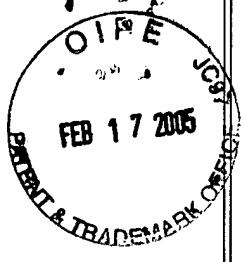
New independent claim 13 is directed to a printer and requires a printing unit for printing during a printing operation on a printable surface of a thermally sensitive adhesive sheet having a thermally sensitive adhesive layer formed on a surface opposite to the printable surface, a first transporting mechanism for transporting the thermally sensitive adhesive sheet through the printing unit, a thermally activating unit for heating the thermally sensitive adhesive layer of the thermally sensitive adhesive sheet, a second transporting mechanism for transporting the thermally sensitive adhesive sheet through the thermally activating unit, a third transporting mechanism for transporting the thermally sensitive adhesive sheet from the printing unit to the thermally activating unit, and control means for controlling the first and third transporting mechanisms as a transporting unit to transport the thermally sensitive adhesive sheet at a preselected speed, and for independently controlling the transporting unit and the second transporting mechanism to thereby independently control the preselected speed and a transporting speed of the thermally sensitive adhesive sheet during transportation thereof by the transporting unit and the second transporting mechanism.

No corresponding structural and functional combination is disclosed or suggested by the prior art of record as set forth above for amended independent claim 1.

New claims 8-12 and 14-20 depend on and contain all of the limitations of independent claims 1 and 13, respectively, and, therefore, distinguish from the prior art of record at least in the same manner as claims 1 and 13.

Moreover, there are separate grounds for patentability of new dependent claims 12 and 16.

Claim 12, which depends on amended independent claim 1 via dependent claims 8-11, includes the additional limitation that the control means includes means for independently controlling a rotational speed of each of the first and second stepping motors. Likewise, claim 16 includes the additional limitations that the first and second drive mechanisms comprise first and second stepping motors, respectively, and that the control means includes means for independently controlling a rotational speed of each of the first and second stepping motors. No corresponding structural and functional combination is disclosed or suggested by the prior art of record.



In view of the foregoing amendments and discussions, the application is now believed to be in allowable form. Accordingly, favorable reconsideration and passage of the application to issue are most respectfully requested.

Respectfully submitted,

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FEBRUARY 14, 2005

Date